

Appl. No. 10/687,299
Amdt. Dated Dec. 13, 2005
Reply to Office Action of Sep. 13, 2005

REMARKS

Claim Rejections under 35 U.S.C. 103(a)

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butscher (US 4,605,933) in view of Lee (US 6,839,028) and Yokoshima (US 6,680,713).

As for independent claims 1 and 7, applicants respectfully disagree with Examiner's opinion. As for independent claim 12, applicants have incorporated dependent claim 19 to independent claim 12 to define over the cited references. Amended claim 12 is now believed to be patentable. Detailed explanations are given below.

Regarding independent claim 1, a patch antenna as defined therein comprises a planar ground plane; a radiating element parallelly disposed above the ground plane with a predetermined distance; a plurality of dielectric supporting portions disposed between the ground plane and the radiating element for supporting the radiating element; a match tab electrically connected with the radiating element; and a feeder cable comprising an inner conductor electrically and mechanically connecting with the match tab and an outer shield conductor electrically and mechanically connecting with the ground plane.

As Examiner believes, Butscher and Lee do not disclose the inner conductor of the feed cable mechanically connecting with the matching tab element in the DETAILED ACTION. Although Yokoshima describes that the impedance matching section 4 is comprised by a matching capacitance section 41 inserted electrically in series between the junction point S

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connected to the inner conductor of the coaxial cable C and the feed point 3 of the antenna main body B, applicants believe Yokoshima can not be applied to Butscher, that is, it is impossible in Butscher to the inner conductor of the feed cable mechanically connecting with the matching tab element.

As shown in column 2, lines 55-58 of Butscher along with FIGS. 1-2, it is recited that *an impedance matching tab 24 extends upward from the lower ground plate 12 to the region in front of the radiating disk 20 along the centerline 23, and the tab 24 primarily provided matching capacitance*. Apparently, the matching tab 24 extends away from the from the ground plate 12 while fails to reach to the radiating disk 20. A capacitor is formed between the radiating disk 20 and the matching tab 24. It is well-known that the capacitor is an open circuit. Supposed that Butscher is taught or suggested by Yokoshima to arrange the inner conductor of the feed cable mechanically connecting with the matching tab, electrical current won't be passed to the radiating disk 20 from the matching tab 24 since there exists an open circuit between the radiating disk 20 and the matching tab 24, thus resulting in the radiating disk 20 of Butscher won't work and cannot radiate energy outwardly. In other words, such a modification to Butscher will be inoperative.

As mentioned before, because the claimed invention refers to an inner conductor electrically and mechanically connecting with the match tab while the Butscher reference discloses an inner conductor electrically and mechanically connecting with the radiating disk, it will be inoperative if modify the Butscher reference to have the inner conductor electrically and (directly/ mechanically connect to the match tab at the same time as

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required in the claimed invention. On the other hand, if such an inoperative hypothetical modified design is further re-modified by electrically and mechanically connecting the mating tab to the radiating disk for completely meeting the claimed invention, such further re-modification will teach away from what Butscher discloses in which the mating tab should be open to the radiating disk for providing capacitance thereof. Therefore, *it has been held that it is not obvious to modify a prior art device in a manner which would lead to an inoperative construction or teach away from what the prior art discloses.*

Independent claim 1 and its associated dependent claims 2-6, 20 are believed to be patentable over the cited references.

In the same way, either of independent claims 7 and 12 also defines the limitation "an inner conductor electrically and mechanically connecting with the match tab". Thus, independent claims 1, 7 and their associated dependent claims 8-11, 13-18 are believed to be in condition of allowance.

Favorable reconsideration and withdrawal of the rejection are respectfully requested.

In view of the above claim amendments and remarks, applicants believe that the claims now pending are in a condition for allowance. Favorable consideration is respectfully requested.

Respectfully submitted,
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